

U. S. DEPARTMENT OF AGRICULTURE - FOREST SERVICE
California Forest and Range Experiment Station

FOREST PEST CONDITIONS IN CALIFORNIA - 1955

FOREST INSECT CONDITIONS

The information contained herein is a summary of the insect conditions in California, as reported to the California Forest and Range Experiment Station by private, state, and government field workers and timber managers. For the third consecutive year, forest insect activity in the state is considered to be relatively low. This continued inactivity may well be indicative of the value of direct and salvage control and the improved management of many stands. The main centers of epidemic are as follows:

1. The Douglas-fir beetle, which has maintained an aggressive infestation for the past two years, has this year shown some trend downward.
2. Lodgepole needle miner damage is still on the increase in Yosemite National Park, and the mountain pine beetle-needle miner complex is efficiently creating a new ghost forest.
3. Oslar's tussock moth, which has been defoliating white fir on the Stanislaus Forest for the past two years, has this year reached a population level where permanent tree damage may result.
4. The white-fir sawfly populations have increased slightly, but have not as yet reached a level where they cause significant defoliation.

There are other centers of forest insect infestation which may seem to have a great local significance, but as seen from a statewide view, they are not of major importance.

As an aftermath of the serious fires which occurred this past season, a large buildup of bark-beetle populations can be expected to occur. Although salvage operations will eventually remove a large percentage of the damaged timber, bark beetles can build dangerous populations next year before trees can be removed. Personnel working in these burned over areas should be watchful for any increase in forest insect damage, and report such damage to the Experiment Station in Berkeley.

The status of the most important insects as they occur in various areas is given below:

A. DOUGLAS-FIR BEETLE

1. Klamath and Trinity River Drainages - Del Norte, Humboldt, Siskiyou and Trinity Counties

Serious losses in Douglas-fir have occurred since 1953 in these north-western counties due to the epidemic proportions of the Douglas-fir beetle. Studies made this year, along with very limited aerial observations, indicate

that the 1955 spring attacks are less numerous than in previous years. No positive statement can be made that the infestation will continue to decrease until further studies can be made. Even if considerable reduction does occur this year, the losses will still remain abnormally high.

Action:--Continued salvage of as many currently infested trees as possible and salvage of killed timber.

B. LODGEPOLE NEEDLE MINER

2. Yosemite National Park - Tuolumne and Mariposa Counties

Defoliation of lodgepole pine by the needle miner has continued to increase again this year. Even though the population of needle miner has decreased in some areas of heavy defoliation, needle size and complement has been decreased proportionately to a greater degree so that complete defoliation will still occur. The infestation advanced into the Tuolumne Meadows area from two sources during this year's flight: The lodgepole north of the meadows was invaded from the Conness and Delaney Creeks area while the population which invaded the area south of the meadows originated in the Cathedral and Tenaya Lake areas. Preliminary tests of various insecticides were concluded this past summer. These tests show the needle miner can be killed by certain insecticides.

Action:--Field tests of proved insecticides to determine the best method of application and lethal dose necessary.

3. Sequoia-Kings Canyon National Park - Fresno and Tulare Counties

The lodgepole needle miner has increased in the Sequoia-Kings Canyon Park area until tree mortality has begun to occur. It is estimated that 100% defoliation will occur about 1957 in the areas of present infestation.

Action:--Continued ground checking - control possibilities will depend on the outcome of the field tests in Yosemite.

C. MOUNTAIN PINE BEETLE

4. Yosemite National Park - Tuolumne and Mariposa Counties

Very heavy losses are occurring in lodgepole pine in the Conness-Alkali Creek drainages in the Yosemite National Park. This tree killing has increased in 1955. There seems to be a slow spread outward in all directions from the centers of population, but thus far the main increase in infestation has developed in place. The number of infested trees per acre occurring in Conness Creek has increased from 2.8 in 1952 to 8.5 in 1955. The mountain pine beetle has eliminated about 50% of the entire stand and has killed 100% in many local areas. It is estimated that there are 46,000 currently infested trees on 5,400 acres in the Conness and Alkali drainages. With the continued decline of tree vigor caused by needle miner defoliation, it is quite likely that this population may begin to involve new areas.

Action:--No control in view of the magnitude of the operation. Ground checking in 1956 to determine distance of spread and rate of increase.

5. Other Areas Within Yosemite National Park

No significant losses were reported within the high-use areas outlined for maintenance control.

Action:--Continued maintenance control within the established zones.

6. Sequoia-Kings Canyon National Park - Fresno and Tulare Counties

There is very little mountain pine beetle activity in this park, and there seems to be, as yet, no association between this bark beetle and the trees defoliated by needle miner.

Action:--Continued maintenance control within presently established zones.

7. Crystal Bay - Lake Tahoe, Nevada

The epidemic of mountain pine beetle on privately owned land in the Crystal Bay area at the north end of Lake Tahoe remains high, but probably losses have not greatly increased over last year. This infestation still seems to be confined to the basin surrounding Crystal Bay.

Action:--Control recommendations have been advanced in the past, but no action has been taken by owner.

8. Westside Sierra Subregion

As usual, there are scattered infested trees throughout the Sierras, but no confirmed reports have been received which require consideration. One report recently received located a number of attacks of the mountain pine beetle in a young sugar pine stand involved in a burn in the Lewis Creek drainage, Madera County.

Action:--No control. Ground check to determine potentials.

D. FIR ENGRAVER BEETLE

9. Sierra Subregion

Scolytus damage continued at a low epidemic level throughout the white fir stands of the Sierra Mountains again this year.

Action:--No control recommended.

E. JEFFREY PINE BEETLE AND CALIFORNIA FLATHEADED BORER

10. Sierra Subregion

Occasional scattered infested trees or small groups, but no extensive damage.

11. Adams Peak - Plumas County

An infestation of Jeffrey pine occurred this spring within a recently logged area located just west of Thompson Peak, close to the area where control was attempted in 1952. Most of the infested trees have been killed by the combined attacks of pine engraver beetles, Jeffrey pine beetles, and flatheaded borers. Logging operations were completed last fall or this spring, and it is assumed that the slash-bred insects have attacked the trees weakened by ground fires, road construction, and accumulations of slash.

Action:--No control, unless surveys in 1956 indicate the infestation has become aggressive in healthy timber.

12. Lassen Volcanic National Park - Shasta County

Control operations carried on in 1954 around Butte Lake resulted in a good reduction in the number of 1955 infested pines. The 1953 control operation around Badger Mountain also netted a good reduction. No important new infestations were reported this year.

Action:--Continued maintenance control within the established zones.

13. Deadman Area - Inyo County

A moderate amount of loss due to the Jeffrey pine beetle has been present in Deadman area for some years. Sanitation-salvage logging was begun a number of years ago to reduce these insect-caused losses. Good results have been obtained in the stands which have been logged, but losses continue in uncut stands.

Action:--Continued sanitation-salvage logging.

14. Southern California

Conditions are improving steadily in the southern California sub-region as a result of direct and indirect control measures. Sanitation-salvage logging in the Barton Flats and Mt. Pinos areas was completed this year and begun in the Big Pines-Wrightwood area. Portions of the Arrowhead-Crestline, Big Bear and Grade Valley areas are currently being logged by sanitation salvage. The above areas in the past contained the majority of the insect problems in this subregion. Maintenance control is being carried out in many of the recreational areas with obvious reductions of insect-caused losses.

The Alamo Mountain area, where sanitation salvage is now proposed, presently contains the most critical problems of infestation by flatheaded borers and pine beetles.

After it was found that feeding on foliage was a prerequisite to sexual maturity in adult flatheaded borers, tests were conducted this summer to determine if mortality of these feeding insects could be obtained by the application of insecticides to pine needles. The results of these tests indicated that adult borers could be killed before they laid eggs.

Action:--Continued sanitation-salvage logging where operators are available and maintenance control within established zones. Field testing of aerial application of DDT for control of California flatheaded borers. Specific area recommendations are noted on summary sheet.

F. WESTERN PINE BEETLE AND PINE ENGRAVER BEETLE

15. Northern California

Damage by the western pine and pine engraver beetles during the summer of 1955 has been light except ^{for} some indication in Lassen County that considerable overwintering broods have developed and may cause serious losses. Engraver beetles have killed a considerable number of trees on the Burney Flat adjacent to McCloud River railroad right-of-way clearing.

Action:--Ground check to evaluate losses and potential of the infestations.

16. Oakhurst - Madera County

About 40 trees have been killed by combined attacks of engraver and western pine beetles in four separate groups. This infestation is expected to subside naturally.

Action:--Continued surveillance - no control.

17. Central Sierra Foothills - Amador, Calaveras and Nevada Counties

A number of reports have been received of small groups of trees usually around residences or areas of public use. There seems to be no connection between groups.

Action:--Private owners should be urged to remove infested trees and destroy the beetle broods.

18. Southern California

Maintenance control programs carried on in many of the recreational areas of southern California have brought about gratifying results in the reduction of beetle-caused losses. Improper slash disposal following logging on private lands has resulted in several outbreaks of pine engravers in recent years. Some of these outbreaks have been made more serious by a buildup of western pine beetle. One such complex is currently in existence in the Julian area.

Action:--Continued maintenance control in established zones. Local action to enforce proper slash disposal on private lands. Continued maintenance control on established zones.

G. FLATHEADED FIR BORERS

19. Cayton Valley and Pondosa Tract - Shasta County

This area was thought to have been improved by salvage of infested Douglas-fir and removal of trees of questionable health. The spring of 1955 brought additional losses in remaining trees. An analysis of dead and unhealthy Douglas-fir revealed that the fir borer was incidental to the damage. The true cause is thought to be physiological.

Action:--Additional work to determine specific cause of damage.

H. OSLAR'S TUSSOCK MOTH

20. Crane Meadows - Tuolumne County

Defoliation has occurred in the area north of Crane Meadows for about three years. Heavy defoliation has occurred this past summer with probably some top killing. Unless considerable reduction of population occurs early next year, some tree mortality will probably result next year.

Action:--Close observations early in the spring of 1956 to determine the potential of the 1956 population and determine the possible need for control.

21. Dorrington - Tuolumne County

This infestation also seems to have existed for about three years, but does not seem to be part of the Crane Meadows area. One area north of Highway 4, where damage was known to have been heavy last year, is now very lightly infested. The area south of the highway, which includes the east corner of Big Trees State Park (South Grove), was heavily defoliated this year, but not as severe as Crane Meadows.

Action:--Ground check in spring of 1956 to determine defoliation potential.

I. WHITE-FIR SAWFLY

22. Sierra Subregion

Fir sawfly damage has been reported throughout most of the Sierras south from the North Warner Mountains to the Sierra National Forest. Although this insect covers an extensive area, the damage is not significant. Where the population has increased in the past, natural control factors have reduced the infestation before permanent stand damage resulted.

Action:--No control necessary - continued observations.

J. SPRUCE BUDWORM

23. North Warner Mountains - Modoc County

The budworm has been working in the white fir and lodgepole pine of this area for several years and yet it has never caused any serious damage. The population this year is far below the level that would result in serious defoliation.

Action:--Continued observations.

K. CONE AND SEED INSECTS24. Northern California

Both Douglas-fir and sugar pine cone crops were light this year, but it is reasonable to think that when there are fewer cones available the insects destroy a greater percentage of those available. Reports indicate that insect damage has taken almost the entire 1955 crop.

Action:--Field tests of aerial application of DDT insecticide on the Klamath, Six Rivers, Shasta-Trinity, and Stanislaus National Forests to attempt to protect the seed crop from insect damage.

L. INSECTS DAMAGING TO ESTABLISHED REPRODUCTION25. Western Mendocino County

A report of twig weevil damaging lodgepole and Bishoppine reproduction in Mendocino County has been recently received.

Action:--Ground survey to determine the extent of the problem.

26. Shasta County

In 1954, an aerial spray project was completed on a plantation of Jeffrey and ponderosa pine in Shasta County to attempt to control the grasshoppers which were damaging the young trees. The control was successful in killing all grasshoppers within the plantation though a high population remained in the brush fields surrounding the plantation. A follow-up spraying was planned for this year, but it was not conducted after it was found that the grasshopper population still remained at a low enough level within the treated area so that damage was not significant.

Action:--Continued surveillance - aerial spraying if feeding damage becomes severe.

M. BLACK PINE LEAF SCALE27. Arrowhead-Crestline - San Bernardino County

Decline of tree vigor and mortality in the Arrowhead-Crestline area has, for the past few years, been attributed to the black pine leaf scale. A pilot spray program using malathion was conducted this spring to attempt control of the young crawler stage of this insect. In the search for spray areas it was found that several trees which had declined in vigor had very small populations of scale. It was therefore concluded that there are other factors besides scale insects contributing to decline in tree vigor in this area. Heavy scale populations were located and sprayed. A recent check of sprayed trees indicated that good control was obtained.

Action:--Further checking is necessary to determine other factors which may reduce tree vigor or cause mortality.

SOUTHERN CALIFORNIA

Project Area	Acreage	Insect <u>1/</u> Species	Host ^{2/}	Recommended Action*
<u>LOS PADRES</u>				
Figueroa Mtn.	1,500	Db	PP-CP	Maintenance control
Mt. Pinos	2,500	Db-FH	PP	Maintenance control
Grade Valley	5,000	FH	JP	Sanitation salvage
Alamo Mtn.	1,500	Db-FH	PP-JP	Sanitation salvage
<u>ANGELES</u>				
Charlton-Chilao & Barley Flats	2,300	Db	PP-CP	Maintenance control
Crystal Lake	1,000	Db-Dj	PP-JP	Maintenance control
Big Pines-Wrightwood	2,500	FH-Ips	JP	Sanitation salvage**
<u>SAN BERNARDINO</u>				
Arrowhead-Crestline	18,000	Dm-Db-Dj	JP-PP-CP	Maintenance control
San Jacinto	14,500	Db-FH	JP-PP-CP	Maintenance control
Barton Flats	7,500	Db-Dj	PP-JP	Maintenance control
<u>CLEVELAND</u>				
Laguna Mtn.	10,000	Db-Ips	JP-PP-CP	Maintenance control
Corte Madera	1,600	Db-FH	JP-PP-CP	Maintenance control
Cuyamaca Rancho State Park	4,000	Db-FH	JP-PP-CP	Maintenance control
Julian	3,000	Db-Ips	PP	Salvage & direct control **

1/ Db - Western pine beetle
 Dm - Mountain pine beetle
 Dj - Jeffrey pine beetle
 FH - California flatheaded borer
 Ips - Pine engraver beetle

2/ PP - Ponderosa pine
 JP - Jeffrey pine
 CP - Coulter pine

*Where maintenance control is recommended, the salvage of infested trees is advisable wherever it is possible. Also, where sanitation salvage is recommended, maintenance control should be done on the portion of the area which has previously been covered by sanitation logging.

**Better control over proper slash disposal is needed to prevent Ips outbreaks on private lands.

PATHOLOGICAL AND PHYSIOLOGICAL DAMAGE

For the first time a small amount of Pest Control Act funds was made available July 1, 1955 to initiate a forest disease survey in California. The funds supplied were not adequate to provide a complete picture of disease conditions throughout the State. The following summary was prepared from detection reports sent in by various cooperators in the statewide survey, and from observations made by the Station Pathologists. Damage from diseases other than white pine blister rust and heart rots is included here. Comparisons of 1955 damage with that in former years can be made only in a general way, as no detailed inventory of disease conditions in the State has been previously made.

Probably the most alarming discovery to come from the survey so far is the heavy and extensive damage from dwarfmistletoe, especially in red fir, and from the Elytroderma needle disease in ponderosa and Jeffrey pines. Damage from root diseases is difficult to appraise and that reported here is based only on scattered cursory observations. Losses from these diseases and many others will be more adequately appraised with the completion of initial observations on a series of permanent sample plots.

A. DWARFMISTLETOE IN RED FIR

1. Southern Sierras - Tuolumne, Mono, Mariposa, Madera, Fresno, Inyo Counties.

Severe damage in much of the red fir country, with heavy losses of mature trees in Cargyle Creek drainage, and more scattered killing at Chilkoot Lake, North Fork of Kings River, Crown Valley, and Wet Meadows on the Sierra and Reds Meadow on the Inyo.

Action:--Plan salvage where possible--cutting to remove all infected trees in overstory, at least in small areas.

2. Northern Sierras - Calaveras, Alpine, Amador, Eldorado, Placer, Nevada, Sierra, Plumas, Lassen Counties

Severe damage in many areas, with heaviest mortality in Lassen Park, and on the East Side in Plumas and Lassen Counties.

Action:--Remove dead trees in heavily used parts of Lassen Park. Salvage by priority cutting in areas of heaviest mortality in East Plumas and Lassen Counties.

B. DWARFMISTLETOE IN PONDEROSA AND JEFFREY PINES

3. Plumas and Lassen Counties

Severe damage and considerable mortality of reproduction has occurred in East Plumas and southern Lassen Counties in the Last Chance Creek drainage.

Action:--Experimental control is now in progress on the Milford District.

4. Sequoia National Forest

Heavy infection in mature trees on the Peppermint Unit.

Action:--Experimental control recommended on 40 acres in the present sale area. Final approval from Washington pending.

C. DWARFMISTLETOE IN OTHER CONIFERS

5. Kern River Canyon

Extensive killing of Digger pines reported.

Action:--No appraisal made or control recommended.

D. ELYTRODERMA NEEDLE DISEASE ON PONDEROSA AND JEFFREY PINE

6. Lassen National Park

Heavy infections and severe damage with some mortality.

Action:--Removal of dead trees in the immediate vicinity of Manzanita Lake Recreation Area.

7. Tahoe Lake Recreation Area

Heavy damage continues in this area. Mortality is scattered with heaviest killing in Bliss State Park and south to Tahoe Valley.

Action:--No control recommended pending results of further research studies.

8. Sequoia National Forest - Evans Flat.

Tree mortality and decline especially heavy in this area this year.

Action:--Salvage cutting of dead trees and marking for cutting heavily infected and declining trees.

E. COMANDRA BLISTER RUST ON PONDEROSA AND JEFFREY PINES

9. Klamath National Forest - Goosenest and Ball Mountain

Tree mortality has been heavy in past years. An unusually large number of pole-size trees were killed in 1955. Many of these trees have broken off at severe bole cankers.

Action:--Plan to establish a sample plot to determine annual loss in this area.

F. LIMB BLISTER RUST ON PONDEROSA AND JEFFREY PINES10. Big Bear, Cajon, San Gorgonio - San Bernardino National Forest

This disease has been causing mortality of tree groups, and the damage has been reported to have increased in 1955.

Action:--No control recommended pending results of further research.

11. Mammoth Lake, Silver City - Inyo & Toiyabe National Forests

This rust continues to cause severe damage to both immature and mature trees.

Action:--Salvage cutting of dead and badly infected trees on the Mammoth District.

G. BOLE CANKER RUST12. On Lodgepole Pine - Throughout the High Sierras

Extensive damage through deforming, stagnating, and killing of mature trees occurs throughout both East and West Side Sierras.

Action:--No control recommended.

H. WESTERN GALL RUST13. North Coast - Del Norte County

Some damage reported, but limited to small areas.

Action:--No control recommended.

I. NEEDLE CAST ON WHITE FIR14. Lassen, Shasta, Plumas Counties

Damage exceptionally heavy in the spring of 1955 at several locations. More reports expected when Christmas tree cutting starts this fall.

Action:--No control recommended.

J. NEEDLE CAST ON JEFFREY AND PONDEROSA PINES15. Lassen County

Fall drought conditions were exceptionally favorable in 1954 for the development of this disease in this area, resulting in heavy needle loss in the spring of 1955.

Action:--None.

K. LEPTOGRAPHIUM ROOT DISEASE16. Blacks Mountain Experimental Forest

Recent mortality in young trees and a few old-growth trees was noted in the spring of 1955. These are the first noted for several years in this area. Disease may be on the increase here.

Action:--Continued surveillance.

L. OTHER ROOT DISEASES17. Entire State

Mortality from the Fomes root disease and the shoestring fungus are now at a fairly low ebb in most of the State. Most killing observed was in the Blacks Mountain area.

Action:--None.

M. WINTER INJURY18. East Side Sierra

Severe winter injury was evident over much of the East Side in the spring. Notable was top killing of incense-cedar reproduction on marginal cedar sites; manzanita killing over the entire East Side; and red belt in the Mammoth Lake area.

Action:--None.

N. PHYSIOLOGICAL DAMAGE19. Entire State

A number of reports of physiological damage and mortality were received. Of special interest were: Decline and dying of Douglas-fir on Shafco property near Pondosa; bitter brush dying in the Antelope area on the Klamath National Forest; Digger pine dying in the Kern River Canyon; ponderosa injury in the Arrowhead area of the San Bernardino National Forest; and redwood dieback in Humboldt County. The dying of bitter brush, while not a factor in Timber Management, is of considerable concern in Range Management.

Action:--None.

O. UNKNOWN DISEASES20. Entire State

Several minor diseases of unknown cause have been reported. Two worthy of special mention were: 1. Branch and tree killing of black oak

in the vicinity of Dunsmuir, and 2. Branch killing of manzanita caused by a canker in the McCloud area and elsewhere.

Action:--Further surveillance and research on causal organisms.

ANIMAL DAMAGE

This is the first year in which a request was made for reports of animal damage to forest trees. The response was somewhat less than was expected. Three reports were received. One reported heavy deer browse damage in Tulare County and two reported porcupine damage, one in Shasta and the other in Modoc County.